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Declaration

I, Michihiko Matsuba, President of Fukuyama Sangyo Honyaku Center, Ltd., of 16-3, 2-chome, Nogami-cho, Fukuyama, Japan, do solemnly and sincerely declare that I understand well both the Japanese and English languages and that the attached document in English is a full and faithful translation, of the copy of Japanese Utility Model Publication No. Sho-53-50420 published on December 2, 1978.

A handwritten signature in black ink, appearing to read 'm. matsuba' in a cursive, lowercase style.

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LENS LOCK DEVICE IN LENS MOUNT

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SPECIFICATION

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view showing a camera provided with a device according to the present utility model so as to be partially cutaway, Fig. 2 is a plan view showing the camera so as to be partially cutaway in a case where a different type of lens is attached to the same camera body, Fig. 3 and Fig. 4 are plan views of a relevant part showing a coupling mechanism for information transmission between a lens side diaphragm mechanism of an automatic diaphragm operation lens applied to the device according to the present utility model and a camera body side mechanism, Fig. 5 and Fig. 6 are side views of the mechanism, Fig. 7 is an exploded perspective view showing the

position of each part in the mechanism of the automatic diaphragm operation lens, and Fig. 8 is a perspective view showing a lens mount of the interchangeable lens performing diaphragm settlement by a manual operation.

DETAILED DESCRIPTION OF THE UTILITY MODEL

The present utility model is a device where, in a lens interchangeable camera, the type of the lens, for example, whether the lens is an automatic diaphragm operation lens or a lens requiring manual diaphragm settlement, or in the case of the automatic diaphragm operation lens, information on whether the lens is in a condition where the diaphragm operation is automatically performed or in a settlement condition by a manual operation by an operation performed under the condition where the lens is attached or performed after the lens is attached is briefly transmitted to the camera side as the lens side information simultaneously with the lens attachment lock by use of a lock mechanism provided in a lens attachment mechanism employing a lens attachment and detachment method such as the bayonet mount. To a person operating a camera, it is extremely convenient that these pieces of information on the type and condition are automatically displayed, particularly, displayed within the finder field, and it is as a matter of course that further causing the exposure meter

incorporated in the camera and members interlocking with it or the exposure control member to act as factors controlling exposure simultaneously with the attachment of the lens is advantageous in the exposure meter interlocking operation or the automatic exposure control operation performed by these members.

While means for transmitting the above-mentioned lens side information to the camera body side itself is known as various known arts, the present utility model is characterized in that by utilizing the lock mechanism of the attached lens used in the lens attachment and detachment mechanism such as the bayonet, such information transmission is integrated thereinto. Thus, the camera body or the interchangeably attached lens does not increase in external size and is of good style. Further, the incorporation of necessary mechanisms is facilitated and for the user, by enabling the process required for the unlocking and coupling and uncoupling of the information transmission mechanism to be performed at the same time by a single unlocking operation, contributions are made to ease of operation.

For this reason, according to the present device, irrespective of whether the information on the lens type or information on the condition is transmitted, the information

is reliably transmitted to the camera body side with a lock mechanism maintaining the same lens attachment condition.

Describing details thereof with reference to an illustrated example, since converting the transmitted information to be received by the camera side into electric circuit control is advantageous in information processing after transmission or display in the illustrated case, an example is shown in which the transmitted information is added to a switch performing the opening and closing of a circuit incorporated in the camera.

A camera body 1 is provided with a base 5 for the lens mount, it is well known that a lens 2 is attached to the base 5, and it is desirable that a lens mount 4 and the base 5 employ the bayonet coupling method for coupling between the lens 2 and the camera body 1.

On the side of the camera body 1, a lock pin 7 always pressed toward the outside of the camera by a spring 9 provided inside, and a lock button 8 integrated with the lock pin 7 through a junction member 8' are provided so as to be movable. At the inner end of the lock pin 7 resiliently pressed by the spring 9 from behind, a movable contact plate 11 of a switch 10 is provided so as to be pressed thereagainst, and the outer end, that is, the front end of the lock pin 7 passes through the base 5 to protrude from the base 5.

On the other hand, on the side of the lens 2 attached to the base 5, according to whether the lens 2 is an automatic diaphragm operation lens or a lens requiring manual diaphragm settlement, a groove 6 or 6a having a different depth is formed at an end surface of the lens mount 4. As shown in the figure, the depth of the groove 6 and 6a is in the direction of the optical axis, and further, the position thereof is a position where the tip of the lock pin 7 passing through the base 5 to protrude therefrom is correctly inserted in either the groove 6 or 6a when the lens mount 4 is coupled to a predetermined position of the base 5 by bayonet coupling.

In the case of the automatic diaphragm operation lens, a switching lever 12 is provided that is swingably attached by an axis 13 screwed in a part of the inside of the lens mount 4 toward the center optical axis of the lens 2 and is swingable about the axis 13. At an end of the switching lever 12, a pin 14 that is engaged with the protruding end of the lock pin 7 is planted, and further, at a side end of the switching lever 12, an inclined end 12' is formed. On the inner surface of the base 4, a protrusion 15 protrudes on a member moved along the inner surface, and this is set so as to slide on the inclined end 12' of the switching lever 12. On a part of the member on which the protrusion 15 protrudes, a diaphragm changing lever

3 is provided that is movable from the automatic diaphragm operation to the manual diaphragm settlement and vice versa outside the lens mount 4. With this structure, when the diaphragm converting lever 3 appearing in Fig. 1, Fig. 2 and Fig. 7 is turned along the outer surface of the lens barrel while being pressed, the protrusion 15 moves as shown in Fig. 5 and Fig. 6 through the member rotating along the inner surface of the lens mount 4. In the course of the movement, the protrusion 15 swings the switching lever 12 about the axis 13 while sliding on the inclined end 12' of the switching lever 12, and acts on the lock pin 7 with the pin 14 on the switching lever 12.

As is understood from the above-described structure, with respect to the switch 10, by the lock pin 7 being depressed, the movable contact plate 11 is flexed to open the switch 10, and when the lock pin 7 protrudes, the switch 10 is closed. Thus, since whether the lock pin 7 is depressed or protrudes is determined according to whether the previously described groove 6 is deep or shallow or to the position occupied by the operation of the diaphragm converting lever 3 in either the normal or reverse direction, for example, by using an automatic diaphragm lens and making a selection so that the lock pin 7 is in a sufficiently protruding condition when the lens is in

the automatic diaphragm operation condition as shown in Fig. 1, the switch 10 is closed thereby, and the exposure meter interlocking or the automatic exposure control circuit is set to operate and the display thereof can be electrically provided as required. When the lens requiring manual diaphragm settlement is attached, as shown in Fig. 2, the lock pin 7 is inserted in the shallow groove 6a so that the lock pin 7 does not sufficiently protrude. This presses the movable contact plate 11 so as to be flexed to open the switch 10. Even when the automatic diaphragm lens is attached, in a case where the diaphragm converting lever 3 is operated to be set at the side of the manual diaphragm settlement, as described above, the protrusion 15 slides on the inclined end 12' of the switching lever 12 to press it, the pin 14 on the lever 12 presses the lock pin 7 to open the switch 10, whereby a condition where the exposure meter does not interlock or a condition where automatic exposure control is not performed can be set or a display indicating that automatic stopping down does not work can be provided.

While the above description with reference to the embodiment is given with an automatic diaphragm operation lens and a manual diaphragm settlement lens as typical types of the attached lens, according to the present utility model, the object types for

information transmission are not necessarily limited thereto. Moreover, the lens condition display is not limited to whether the lens is under the automatic diaphragm operation condition or under the manual diaphragm settlement condition, but as a matter of course, the present utility model is applicable to all the cases where it is desirable to separately transmit a wide variety of types of lenses and different diaphragm conditions to the camera side as information.

While a case where electric display and operation control of incorporated devices are performed by means for opening and closing the switch 10 on the camera body side receiving information transmitted through the conditions of the protruding position and the depressed position occupied by the lock pin 7 is described as an example, it is to be understood that the display and the like may be performed by mechanical coupling means instead of the opening and closing of the switch.

As described above, according to the lens lock device of the present utility model, by easily transmitting the lens type and the lens condition to the camera side as information by utilizing it as the lens lock mechanism when the lens is interchanged, display and necessary circuit control in the camera to be performed together with this are facilitated. In particular, in the present utility model, since in transmitting

the information on the type and condition of the lens side to the camera side, this is avoided by use of a space in the lens barrel, no harm is done to the taking optical path, the utility model is functionally superior, the appearance is not spoiled since there is no additional structure outside around the lens, and the production cost is hardly affected because of its simple structure since the lock pin is used also for information transmission. Thus, the utility model is high in practicality.

WHAT IS CLAIMED IS:

A lens lock device in a lens mount, comprising; the lock pin 7 protruding from the base 5, for lens attachment, of the camera body 1 under a condition of being resiliently pressed by the spring 9; an information obtaining member such as the switch 10 obtaining information transmitted by an action received by the lock pin 7 and operating in response thereto; and the interchangeable lens 2 where the groove 6 or 6b having a different depth according to the type of the interchangeable lens and in which the protruding part of the lock pin 7 is inserted under an attached condition is formed in the lens mount 4 in close contact with the base 5 so as to maintain a predetermined coupled condition, wherein the interchangeable lens 2 provided with the deep groove 6 is provided with a member such as the pin 14 acting on the lock pin 7 while maintaining

an engagement with the lock pin 7 in the deep groove 6 in conjunction with a movement of the diaphragm converting lever 3 converting the diaphragm operation condition by an external operation, and that when the interchangeable lens 2 is attached, by the depth of the groove 6 or 6a in which the lock pin 7 is inserted while a lens lock function by the lock pin 7 is maintained or from the action exerted on the lock pin 7 by an acting member such as the pin 14, information on the type of the attached interchangeable lens and the operation condition of the settled diaphragm is relayed and transmitted to the information obtaining member such as the switch 10 through the lock pin 7.

CITED REFERENCE

Japanese Patent Publication No. Sho-39-4290

Fig.1

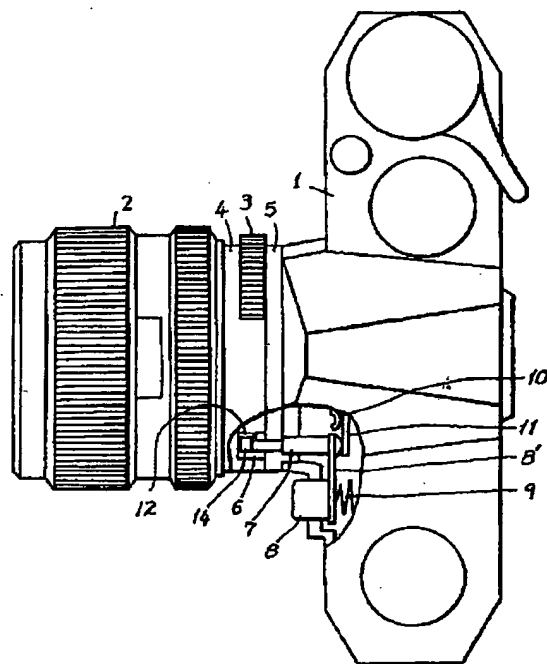


Fig.2

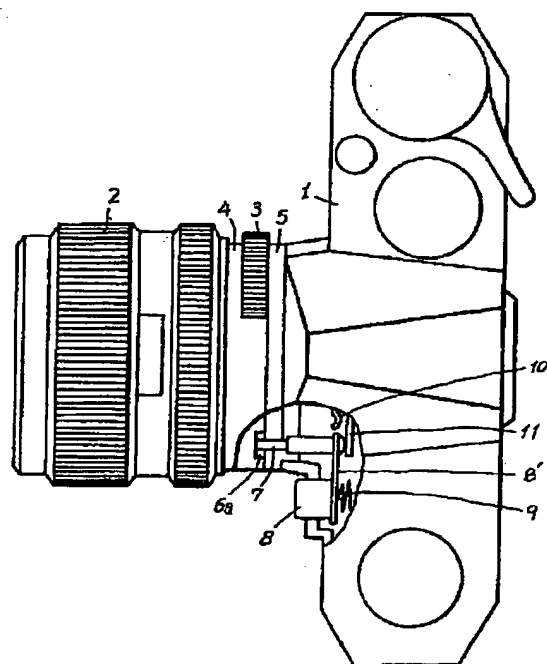


Fig.3

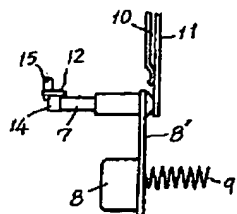


Fig.4

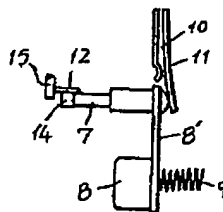


Fig.5

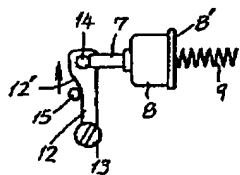


Fig.6

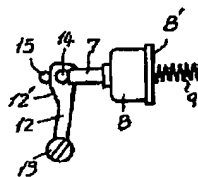


Fig.7

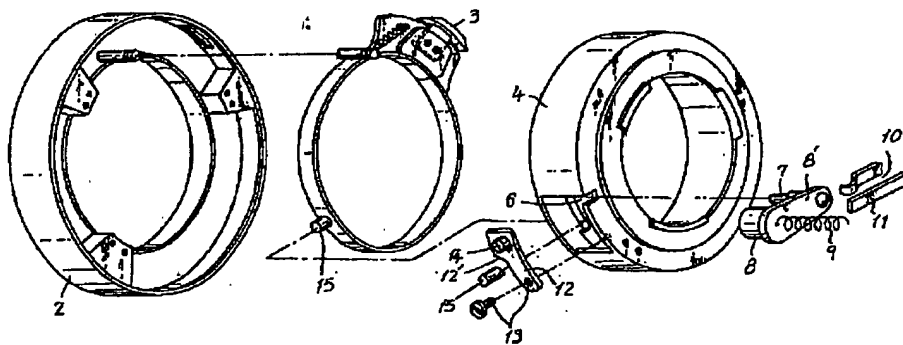


Fig.8

